

Thursday, January 17th 2019, 2pm ET

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Investigating the role of functional modularity in language recovery

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There is increasing interest in understanding how brain lesions affect the coordination of neural activity between brain regions as well as in understanding the role that changes in this functional connectivity may play in recovery. fMRI, by measuring the activation time-courses of brain regions, provides a basis for quantifying functional connectivity. Furthermore, graph theoretic approaches provide an analytic tool for characterizing the properties of the brain's vast functional connectivity. Graph theoretic analyses of functional connectivity have revealed that the brain is organized into a non-random, modular structure consisting of densely inter-connected clusters of brain regions. Characteristics of this functional modularity structure have been linked to cognitive performance in healthy populations and various neurological disorders. Therefore, understanding how lesions affect modularity structure may provide critical insights into mechanisms of neural plasticity. Computer simulations predict that lesions can have widespread effects on the brain's functional connectivity structure, however, relatively little work has examined the consequences of actual lesions on functional modularity. I will review current research on the use of *modularity* and related graph-theoretic measures in understanding aphasia and language recovery, providing an example from our own research. Our findings illustrate how analysis of the modularity characteristics of brain networks can increase our understanding of post-stroke neural changes and the network reorganization that supports recovery of function.

The lecture will be held at Johns Hopkins University. However, it will be broadcast live to USC:

Room #140, Discovery I, 915 Greene Street, Columbia, SC 29208

Date: Thursday, January 17th 2019, Time: **2pm – 3pm** EDT

The viewing event will be catered!

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